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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/581,570

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Hans H. Liao

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EXAMINER

GEBREYESUS, KAGNEW H

ART UNIT

PAPER NUMBER

1656

MAIL DATE

DELIVERY MODE

05/07/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/581,570	<b>Applicant(s)</b> LIAO ET AL.	
	<b>Examiner</b> KAGNEW H. GEBREYESUS	<b>Art Unit</b> 1656	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 February 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-65 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-65 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

- I. Claims 1-41 are drawn to a transformed cell comprising beta-alanine/pyruvate aminotransferase activity, wherein the cell comprises an exogenous nucleic acid molecule encoding a beta- alanine/pyruvate aminotransferase, and wherein the cell produces 3-hydroxypropionic acid (3- HP) from beta-alanine, and method of using the same.
- II. Claims 42-50, 62-65 are drawn to a recombinant nucleic acid, a vector or a cell comprising a nucleic acid molecule encoding a beta-alanine/pyruvate aminotransferase; and a nucleic acid molecule encoding a dehydrogenase capable of converting malonate semialdehyde to 3-HP and can further comprise a nucleic acid encoding alanine 2, 3-aminomutase.
- III. Claims 51-53 are drawn to an isolated peptide comprising alanine 2,3 aminomutase activity, wherein the peptide comprises a sequence having at least 90% sequence identity to SEQ ID NO: 22 .

- IV. Claims 54-61 an isolated nucleic acid molecule comprising a nucleic acid molecule that encodes peptide comprising alanine 2,3 aminomutase activity.

The inventions listed as Groups I-IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The technical feature of the first claimed invention is a transformed cell comprising a nucleic acid that produces 3-hydroxypropionic acid (3-HP) from beta-alanine. However cells transformed with one or more nucleic acids that produce 3-hydroxypropionic acid (3-HP) are described in US 7,186, 541 B2 (Gokarn et al filed on Nov. 20, 2001). Therefore the technical feature disclosed is not a special technical feature as required by PCT Rule 13.1 because it does not make a contribution over the prior art.

Furthermore this application contains claims directed to more than one species of the generic invention. These species are deemed to lack unity of invention because they are not so linked as to form a single general inventive concept under PCT Rule 13.1.

The species are as follows:

**If applicants elect the invention of Group I-II must elect a species from the following group:**

- i) a beta-alanine/aminotransferase activity, encompass claims 1-4, 16-19.

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ii) a beta-alanine/aminotransferase and 3-hydroxypropionate dehydrogenase encompasses claims 5-10, 33, 35, 16-19.

iii) a beta-alanine/aminotransferase and an alanine 2,3-aminomutase encompasses claims 11-15, 16-19, 34, 40 and 41.

iv) a beta-alanine/aminotransferase, a lipase or esterase, encompass claims 20-21, 23, 24, 29, 30, 32, 36, 37, 39

v) a beta-alanine/aminotransferase, 3-hydroxypropionate dehydrogenase, alanine 2,3-aminomutase and a lipase or esterase encompass claims 22, 31

v) a beta-alanine/aminotransferase activity and aldehyde dehydrogenase activity and alcohol dehydrogenase activity encompass claims 25, 26 and 28, 38.

vi) a beta-alanine/aminotransferase, 3-hydroxypropionate dehydrogenase, an alanine 2,3-aminomutase, aldehyde dehydrogenase activity and alcohol dehydrogenase activity encompass claims 27.

**Furthermore if Applicants elect the invention in group III or IV they must also elect a recombinant nucleic acid or encoded a protein selected from:**

a) a beta-alanine/aminotransferase and 3-hydroxypropionate dehydrogenase encompass claims 42, 43, 45-48, 49, 50

b) a beta-alanine/aminotransferase, 3-hydroxypropionate dehydrogenase, alanine 2,3-aminomutase encompass claims 42, 44, 45-48.

**Furthermore for all the above groups, Applicants must elect a single beta-alanine/aminotransferase from:**

A) SEQ ID NO: 17 or B) SEQ ID NO: 19 and;

**and a single alanine 2,3-aminomutase from the group:**

C) SEQ ID NO: 21, D) SEQ ID NO: 23, E) SEQ ID NO: 25.

Applicant is required, in reply to this action, to elect a single species to which the claims shall be restricted if no generic claim is finally held to be allowable. The reply must also identify the claims readable on the elected species, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered non-responsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

The following claim(s) are generic: Claim 1, 33, 42, 49, 50, 51, 54, 59-65.

The species listed above do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, the species lack the same or corresponding special technical features for the following reasons: Each of the nucleic acids or polypeptides comprises a different structure that is not obvious over the other.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAGNEW H. GEBREYESUS whose telephone number is (571)272-2937. The examiner can normally be reached on 8:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kathleen Kerr Bragdon can be reached on 571-272-0931. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kagnew H Gebreyesus PhD  
Examiner  
Art Unit 1656

/Robert B Mondesi/  
Primary Examiner, Art Unit 1652